

WHAT IS CLAIMED IS:

1. A fiber-reinforced, flexible matrix, wherein said matrix comprises:

about 10% to about 75% by weight of waste scrap carpeting, wherein said carpeting has a polyvinyl chloride backing and carpet fibers from a polymer having a melting point higher than the melting point of polyvinyl chloride; and

about 25% to about 90% by weight of a flexible polyvinyl chloride, wherein said matrix is a substantially continuous phase of polyvinyl chloride having carpet fibers dispersed therein.

2. The matrix of claim 1, further comprising up to about 5% by weight of a polyvinyl chloride plasticizer.

3. The matrix of claim 1, further comprising up to about 5% by weight of a polyethylene copolymer.

4. The matrix of claim 1, wherein said matrix is a substantially homogenous mixture of polyvinyl chloride and discrete carpet fibers having a length of about 1/8 to about 2 inches.

5. The matrix of claim 1, wherein said polymeric fibers are selected from the group consisting of polyamide fibers, polyester fibers and mixtures thereof.

6. The matrix of claim 1, wherein said matrix comprises about 45% to about 85% by weight polyvinyl chloride.

7. The matrix of claim 1, wherein said flexible polyvinyl chloride is virgin polyvinyl chloride having a Shore A hardness of about 40 to about 100.

8. The matrix of claim 1, wherein said carpet scrap is selected from the group consisting of carpet scrap, post consumer carpet scrap, post industrial scrap, and mixtures thereof.

9. The matrix of claim 2, wherein said plasticizer is dioctyl phthalate.

10. The matrix of claim 1, wherein said matrix comprises about 5-20% by weight carpet fibers.

11. The matrix of claim 1, wherein said matrix comprises about 10-55% by weight polyvinyl chloride from said carpet.

12. The matrix of claim 1, wherein said carpet comprises about 15% fiber, about 45% polyvinyl chloride backing and about 40% inert material wherein the percentages are based on the weight of the matrix.

13. The matrix of claim 12, wherein said fibers comprise polyamide fibers, polyester fibers, and mixtures thereof.

14. A process of forming a molded article comprising the steps of:

supplying a feed mixture to the inlet of an extruder, said feed mixture comprising carpet scrap having a fiber component and a polyvinyl chloride component, and a source of flexible polyvinyl chloride;

heating said feed mixture in said extruder to a temperature sufficient to melt said polyvinyl chloride of said carpet scrap and of said polyvinyl chloride source substantially without melting said fiber component and substantially without reducing the fiber length to form a substantially uniform mixture of melted polyvinyl chloride and an unmelted fiber component;

discharging said mixture from said extruder and shaping and cooling said mixture to form a molded article of a matrix of polyvinyl chloride having said unmelted fiber component dispersed therein.

15. The process of claim 14, wherein said carpet scrap comprises about 20% by weight of said fiber component.

16. The process of claim 15, wherein said fiber component comprises polyamide fibers, polyester fibers, and mixtures thereof.

17. The process of claim 14, wherein said feed mixture comprises about 10% to about 75% by weight of carpet scrap and about 25% to about 90% by weight of said source of polyvinyl chloride.

18. The process of claim 14, wherein said fiber component comprises fibers having a length of up to about 2 inches.

19. The process of claim 14, further comprising comminuting said carpet scrap into pieces of up to about 2 inches in length prior to feeding to said extruder.

20. The process of claim 19, wherein said fiber component and said matrix includes fibers having a length substantially equal to the fiber length of said feed mixture.

21. The process of claim 14, comprising heating said feed mixture to about 140° to about 190°C to melt said polyvinyl chloride substantially without melting said fiber component.

22. The process of claim 14, wherein said discharging and shaping comprises injection molding said mixture.

23. The process of claim 14, wherein said discharging and shaping comprises extrusion molding said mixture.

24. The process of claim 14, wherein said discharging and shaping comprises compression molding said mixture.

25. The process of claim 14, wherein said flexible polyvinyl chloride has a Shore A hardness of about 40 to about 100.

26. The process of claim 14, wherein said matrix comprises about 5% to about 20% by weight of said fiber component and about 45% to about 85% by weight of polyvinyl chloride.

27. The process of claim 14, wherein said matrix comprises about 10% to about 40% by weight of unmelted filler materials from said carpet.

28. The process of claim 14, wherein said matrix comprises about 10% to about 55% by weight of polyvinyl chloride supplied from said carpet scrap.

29. The process of claim 14, wherein said carpet scrap comprises post consumer carpet scrap, industrial carpet scrap, and mixtures thereof.

30. The process of claim 14, wherein said feed mixture further comprises a PVC plasticizer.

31. The process of claim 30, wherein said plasticizer is dioctyl phthalate.

32. The process of claim 14, wherein said feed mixture further comprises up to about 5% by weight ethylene vinyl acetate.

33. A flexible, resilient, injection molded floor tile obtained by the process of claim 14.